

Case 297 : Narrative

Case Vehicle (A): 1999 Ford	Veh. (B): 1998 Chevrolet
Type: Escort ZX2, 2-door coupe	Type: Tracker, 4 x 4, 2-door convertible SUV
Driver: 49- year-old female	Driver: 49- year-old female
CDC: 12-FDEW-2	CDC: 02-RYEW-2

SITUATION

1 It was daylight, the weather was clear, and the surface of the north-south, two-lane road was dry and free of defects. 2 Case vehicle (A) was traveling north at a driver-estimated speed of 56 kph (35 mph) in the northbound lane, and vehicle (B) was traveling south at an unknown speed in the southbound lane. At a T-type intersection with a two-lane road to the east side of the north-south road, the driver of vehicle (B) turned left into the path of case vehicle (A). 3 4 The driver of case vehicle (A) applied the brakes and steered a little to the right, but the front of case vehicle (A) struck the right side of vehicle (B). Case vehicle (A) left 25 meters of locked front wheel skid marks with its left-front wheel and 21 meters of skid marks with its right front wheel.

Case vehicle (A) and vehicle (B) were towed from the scene. The female driver of case vehicle (A) had police reported (A) injuries, and was transported to a local hospital by ambulance where she was treated and released. The driver of vehicle (B) had no police-reported injuries. The driver of vehicle (B) had been drinking and a blood alcohol test revealed a level of .28 percent.

GENERAL VEHICLE DAMAGE AND ESTIMATED CRASH SEVERITIES

[5](#) Damage to case vehicle (A) was moderate. [6](#) Direct contact damage began at the right-front bumper corner and extended across the entire width of the front bumper. [7](#) The maximum crush was 28 cm to the right-front bumper corner.

[8](#) Damage to vehicle (B) was moderate. Direct contact damage began just rear of the right B-pillar and extended 242-cm forward to the right-front bumper corner. The maximum crush was 17 cm to the right-front wheel well. [9](#) The front bumper was buckled and deflected to the left. [10](#) There was no damage to the rear of the vehicle. [11](#) The right wheelbase was reduced 9 cm, [12](#) there was no significant change to the left wheelbase. Using the WinSMASH crash-reconstruction program and [13](#) [14](#) [15](#) [16](#) c-values measured for case vehicle (A), and [17](#) [18](#) [19](#) vehicle (B), the following impact severities were calculated:

Vehicle	Variable	Calculated Velocity Change - kph (mph)		
		Total	Longitudinal	Latitudinal
Case Vehicle (A)	delta V	23 (14)	- 22 (-14)	4 (2)
Vehicle (B)	delta V	23 (14)	-8 (-5)	-22 (-14)

DESCRIPTION OF DAMAGE TO CASE VEHICLE (A)

Exterior

[20](#) Direct-contact damage was primarily to the front, but right of center, and included the bumper, the right fender, and the hood. The right portions of the bumper, the hood and the right fender were crushed rearward and the right fender was buckled. The grille and right headlight assembly were also damaged by direct contact. [21](#) The bumper cover was torn off, and [22](#) the right-front portion of the hood was buckled. [23](#) The hood latch was

damaged, but it did not release and was not jammed closed, and there was no damage to the hood hinges. [24](#) The rear edge of the hood was slightly elevated but it did not contact the windshield, [25](#) which was cracked in a 31-cm long star pattern on the right half from passenger airbag cover contact.

[7](#) On the right side, the front fender was crushed rearward and buckled. [26](#) The right-side door was closed and operational, and there was no right-side glazing damage. [27](#) The right wheelbase was reduced by 3 cm.

[28](#) [29](#) [30](#) There was no left-side damage, and no significant change in the left wheelbase. The left door remained closed during the crash and was operational.

There was no damage to the rear of the vehicle.

Interior

This vehicle was equipped with steering-wheel and passenger frontal-impact airbags, and [31](#) [32](#) [33](#) both deployed. [34](#) [35](#) [36](#) The lower cover/flap of the steering-wheel airbag module was slightly bowed inward, possibly from contact with the driver's arm. [37](#) The cover/flap of the passenger airbag module was slightly bowed inward from [38](#) contacting and cracking the windshield. [39](#) [40](#) There were no deformations of the steering-wheel rim or spokes, [41](#) but there was a scuffmark on the upper section of the steering-wheel rim. [42](#) There was also a scuffmark on the knee bolster cover. [43](#) [44](#) [45](#) There were no intrusions and no other interior damage.

OCCUPANT KINEMATICS AND INJURIES

[46](#) The 5-ft, 5-in, 118-lb, 49-year-old female driver was reportedly wearing the three-point belt and the frontal-impact airbag deployed, although [47](#) there were no witness marks on the plastic D-ring to confirm belt use during the crash. The seat was adjusted to a mid-

track position, and the steering-wheel tilt was in a mid position. The driver was reportedly braking with her right foot and bracing with her arms just prior to the impact.

On impact, the driver moved forward and slightly to the left relative to the vehicle interior. She sustained a dislocation of the right elbow with posterior displacement of the radius and ulna relative to the humerus, and a fracture to the ulnar coronoid process, probably due to airbag loading of the forearm, and possibly due to bracing on the steering wheel.

The following table and attached drawing [48](#) summarize the injuries for the driver of case vehicle (A).

Occupant: Driver	Age: 49 years	Gender: Female		
Restraints: 3-point belt worn; frontal-impact airbag deployed	Stature: 165 cm (5 ft, 5 in)	Mass: 54 kg (118 lb)		
Injury Description	A.I.S.	Injury Source		
—	—	Definite	Probable	Possible
Fracture of the right ulnar coronoid process	2	—	Airbag	Steering wheel (bracing)
Dislocation of right elbow with posterior displacement of the radius and ulna relative to the humerus	1	—	Airbag	Steering wheel (bracing)
Maximum A.I.S. Level	2	—	—	—
Injury Severity Score	4	—	—	—

CASE NO.: 2004-01

CASE HISTORY: Fall

TYPE: Roadway Exit, 3-4000-0000

EXPLANATION: 39-year-old female

STATURE: 168 cm (5' 6, 0 in) MASS: 68 kg (150 lb)

RIGHT HAND: 3-point ball wrist, radial impact
ulnar displacement

INVESTIGATOR: 0000-1 0000-0



Case/No. 202-05

Case/Veh. ID: 1999-Ford

Type: Model 200, 3 door coupe

Driver: 48 year old female

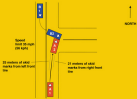
Veh. ID: 1999 Chevrolet Tracker EX 4, convertible 3 door SUV

Light Conditions: Daylight

Weather: clear

Road Surface: Dry

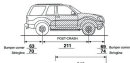
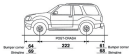
Road Construction: Asphalt



MEASUREMENTS IN CENTIMETERS



Max. crush
to right side



Length of direct damage to right side

REQUIREMENTS IN CONSTRUCTION



Max. crush
to right front
bumper corner

28

166

Width of direct damage
to front



WINDSHIELD MARK ON CASE VEHICLE:

SOLAR TINT

Ford



LAMINATED

AS-1

DOT-287 VF-M582

9

B

DW-1300



Windshield cracked due to passenger airbag cover contact

1 = Definitely 2 = Probably 3 = Possible

INTRUSION IT-1

Location of Intrusion	Intruded Component	(All Measurements Are in Centimeters)			Dominant Crush Direction
		Comparison Value	–	Intruded Value = Intrusion	
	None		–	=	
			–	=	
			–	=	
			–	=	
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OCCUPANT CONTACT WORKSHEET

Contact	Interior Component Contacted	Occupant No. if Known	Body Region if Known	Supporting Physical Evidence	Confidence Level of Contact Point
A	knee bolster	Dr	knees	scuffmark	1
B	steering wheel hub	Dr	rt. arm	lower airbag module flap bowed inward	3
C	Steering-wheel rim	Dr	hands	scuffmark on upper section	3
D					
E					
F					
G					
H					

Enter Rating



Starts is _____
 If yes, how many _____
 at 1 and 11 o'clock

Ends is _____
 If yes, how many _____

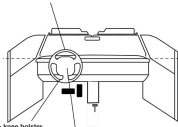
Enter Rating Score



**C = steering wheel rim,
scuff mark**

**A = knee bolster,
scuff mark**

**B = steering wheel hub,
slightly deformed**



Passenger Aftbay



Notes: ☒ 15
 If yes, how many: 2
 at 3 and 6 o'clock

Notes: ☐ 15
 If yes, how many: _____

Passenger Aftbay Doors
 Single Door





















CHEVROLET

11892

VOTE FREEDOM FIRST





TRACKER

CHEVROLET
11892

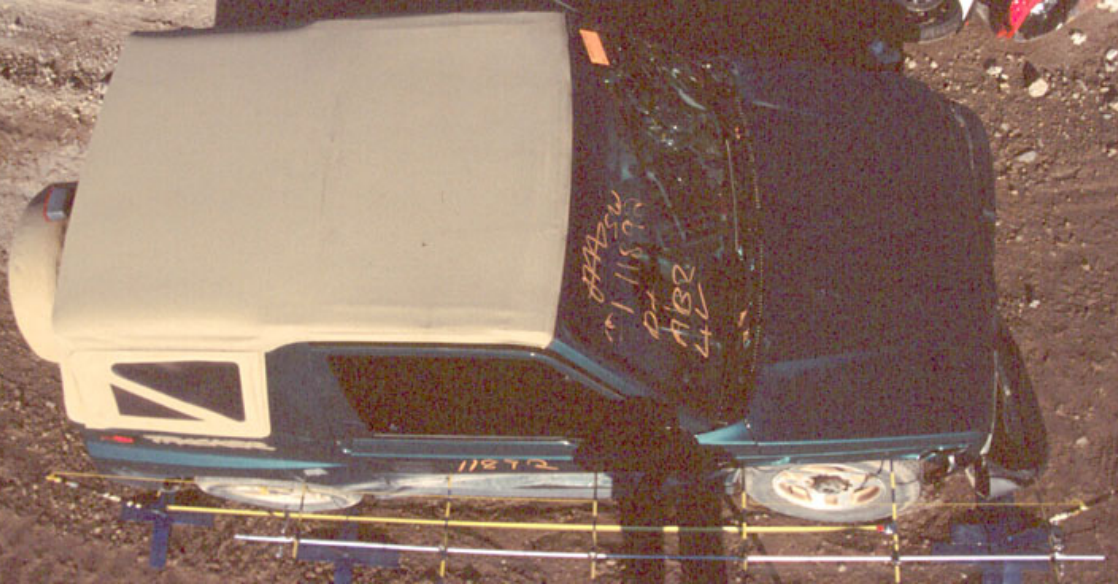
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415
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ESCORT































WARNING
DO NOT
SMOKE
OR
DRINK
ALCOHOL
WHEN
DRIVING
THIS
VEHICLE
EQUIPPED
WITH
AIR
BAGS
AND
ANTI-LOCK
BRAKES
FOR
SAFETY
REASON
DO NOT
REMOVE
OR
DISCARD
THIS
LABEL

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WARNING
DO NOT
REPAIR OR
REPLACE
THE GLASS
IF IT IS
CRACKED OR
SHATTERED
OR IF THE
GLASS IS
LOOSE OR
DISLOCA-
TED. IF THE
GLASS IS
CRACKED OR
SHATTERED
OR IF THE
GLASS IS
LOOSE OR
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GLASS MUST
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BY A QUALIFIED
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